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EXAMINER

BROOKMAN, STEPHEN A

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/568,242	<b>Applicant(s)</b> PADAN, NIR	
	<b>Examiner</b> Stephen Brookman	<b>Art Unit</b> 4114	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 24 July 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-41 is/are pending in the application.
- 4a) Of the above claim(s) 11, 18-21 and 34-36 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10, 12-17, 22-33 and 37-41 is/are rejected.
- 7) ☒ Claim(s) 7, 12, 16 and 39 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 February 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>2/14/2006, 8/23/2007</u> .                                    | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's election without traverse of Species 2 (Claims 2, 7, 12, 14-17, and 28-33) in the reply filed on July 24, 2008 is acknowledged. The generic claims (3-6, 8-10, 13, 22-27, and 37-40) as noted in the Office Action dated June 20, 2008 are further included in examination. The examiner further acknowledges the amendments to the claims dated July 24, 2008, wherein the amended Claims 1 and 28 are now acknowledged as being generic. The examiner further acknowledges the addition of Claim 41.

2. Claims 11, 18-21, and 34-36 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on July 24, 2008.

### *Drawings*

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the ordnance transfer assembly must be shown or the feature(s) canceled from the claim(s). No new matter should be entered. It should be noted that "ordnance transfer assembly" is not provided with a reference number or distinct definition of what it includes within the specification. The application has been examined with the assumption that "ordnance transfer assembly" includes any of the apparatus that involves the extension from the aircraft.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

4. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

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5. The disclosure is objected to because of the following informalities: on page 22, line 32, it appears that the reference numeral for the cradle (32) should be (42), as in line 29.

Appropriate correction is required.

### ***Claim Objections***

6. Claim 7 is objected to because of the following informalities: there appears to be an unintended "s" at the end of "the extendible arms" in lines 1-2. Appropriate correction is required.

7. Claim 12 is objected to because of the following informalities: there appears to be an unintended "s" at the end of "joint" in line 2. Appropriate correction is required.

8. Claim 16 is objected to because of the following informalities: there appears to be an unintended "d" between "end of the" and "arm" in line 2. Appropriate correction is required.

9. Claim 39 is objected to because of the following informalities: it appears that the word "of" is missing between "the step" and "aborting". Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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11. Claims 1,6, 8, 13-14, 16, 28-29, 32, 37-38, and 39 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In Claim 1, it is unclear which ordnance unit is transferred by the ordnance transfer assembly, as there are four different "an at least one ordnance unit" limitations claimed. For the purpose of examination, the examiner has assumed that the same ordnance unit is in consideration.

Claim 6 recites the limitation "the ordnance transfer control assembly" in line 1. There is insufficient antecedent basis for this limitation in the claim.

Claim 8 recites the limitation "the ordnance transfer control assembly" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Claim 13 recites the limitation "the at least one ordnance assembly" in lines 3-4. There is insufficient antecedent basis for this limitation in the claim.

Regarding Claim 14, it is not clear how the end of the extendible arm (i.e. as claimed, the innermost telescopic tube) is linked to an arm assembly. It is unclear in that it appears that the arm assembly referred to is the extendible arm, which means that the claim is that the extendible arm is linked to itself. The term "arm assembly" is vague, rendering the claim indefinite. For the purpose of examination, the examiner has interpreted this "arm assembly" to be any additional arm-like apparatus at the end of the telescopic tube.

Regarding Claim 16, it is unclear how the arm assembly comprises a transferable ordnance assembly connected to the second end of the arm assembly wherein the

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transferable ordnance assembly comprises an ordnance carrier cradle equipped with gripping arms to secure a transferable ordnance assembly to the ordnance carriage cradle. It is unclear how a transferable ordnance assembly can comprise a cradle to secure itself to the same cradle, which appears to be part of itself, as claimed. For the purpose of examination, the examiner has interpreted the "transferable ordnance assembly" in line 4 to be an ordnance unit, and in lines 2-3 to be an "ordnance transfer assembly."

Claim 28 recites the limitations "the first end" in line 10, "the second end" in line 11, and "the associated ordnance conveyor mechanism" in lines 14-15. There is insufficient antecedent basis for these limitations in the claim.

Claims 29 and 32 each recite the limitation "the pylon" in line 5. There is insufficient antecedent basis for this limitation in the claims.

Claim 37 recites the limitations "the first end of the arming cable" and "the fuzing device" in line 3. There is insufficient antecedent basis for these limitations in the claim.

Claim 38 recites the limitations "the pylon" in lines 2 and 3 and "the second end of the arming cable" in line 3. There is insufficient antecedent basis for this limitation in the claim. Further, Claim 38 is unclear, as it is not clear which cable is to be attached to the pylon (the previously used cable or a new one). For the purpose of examination, the examiner has interpreted this to be a new cable attached to the pylon.

Regarding Claim 39, the language of the claim is unclear and renders the claim indefinite. Specifically, under the examiner's assumption that "of" should be between "the step" and "aborting" in line 1, the language "further comprises the step of aborting

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the ordnance transfer comprises the retrieval of the arm" is unclear. Additionally, there is insufficient antecedent basis for "the step aborting the ordnance transfer" in the claim. For the purpose of examination, the examiner has best understood this claim as referring to retrieving the arm upon the desire to end the ordnance transfer.

***Claim Rejections - 35 USC § 102***

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

13. Claims 1, 41, 2-5, 7, 22, 25, 28-33, and 39 are rejected under 35 U.S.C. 102(b) as being anticipated by Minovitch (U.S. Patent 5,103,712).

With regard to Claim 1, Minovitch teaches an apparatus for the air-to-air transfer of at least one ordnance unit (i.e. ammunition) from a first airborne aerial vehicle to a second airborne aerial vehicle, the apparatus comprising:

- An ordnance storage rack within a cargo space of the first airborne aerial vehicle to provide pre-transfer storage space to an at least one ordnance unit (i.e. storage magazine 66 in supply aircraft 58)
- Pylon installed on the second airborne aerial vehicle and intended to receive an at least one ordnance unit transferred from the first airborne aerial vehicle to the second airborne aerial vehicle (i.e. magazine 76,



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acting as a pylon/receiving apparatus, which stores the ordnance unit after transfer, or receptacle 60, accepting the apparatus)

- An at least one transferable ordnance unit positioned prior to transfer on the ordnance storage rack located within the cargo space of the first airborne aerial vehicle (i.e. the ammunition 12/64 is initially within the magazine 66 in supply aircraft 58)
- An ordnance transfer assembly providing for the carriage of the at least one ordnance unit from the first airborne aerial vehicle to the second airborne aerial vehicle (i.e. conveyor 10 provides for the carriage of the ordnance unit)
- A power generator device to provide power for the movement of the ordnance transfer assembly (i.e. rotating driveshafts 48 are inherently driven by a power generator device)

With regard to Claim 41, Minovitch teaches the ordnance transfer assembly further comprising an extendible arm assembly (i.e. the conveyor 10 is an extendible arm assembly as seen in Figures 1 and 3) attached to the first airborne aerial vehicle, the arm first end is attached to the body of the first airborne aerial vehicle, the arm second end inherently provided with freedom of movement (assisted by control surfaces 54).

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With regard to Claim 2, Minovitch teaches the apparatus further comprising an ordnance transfer control assembly providing for the control of the arm and the ordnance transfer assembly to enable controlling the movement of the extended arm in a bi-directional, multi-axis movement (i.e. an operator positioned in 56 maneuvers the conveyor 10 via the aerodynamic control surfaces 54, inherently via a control assembly, causing bi-directional, multi-axis movement).

With regard to Claim 3, the ordnance storage rack inherently comprises an at least one disposed storage cradle to hold the at least one ordnance unit and disposed supporting members to support the at least one disposed storage cradle (i.e. the ordnance storage rack / storage magazine 66 inherently functions as a storage cradle to hold the ordnance unit/ammunition 12/64, and this magazine is inherently supported by structural members within the supply aircraft 58).

With regard to Claim 4, the ordnance unit is an aerial bomb device intended to be ejected from the second aerial vehicle toward a target (i.e. ammunition 64 is inherently functional as a bomb to be ejected from the second aerial vehicle toward a target).

With regard to Claim 5, the ordnance unit is a missile device to be launched from the second aerial vehicle toward a target (i.e. ammunition 64 is to be

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fired/launched from the second aerial vehicle gun toward a target, or self-propelled missiles, Column 4, line 5).

With regard to Claim 7, the extendible arm assembly further comprises a foldable aerodynamic control surface assembly to provide for aerodynamic lift and control to the extendible arm (i.e. wings 52 have movable aerodynamic control surfaces 54, inherently foldable to some degree, to provide for aerodynamic lift and control to the extendible arm, Column 3, lines 12-19).

With regard to Claim 22, the first airborne aerial vehicle is a manned cargo aircraft (i.e. an operator is in the supply aircraft, Column 3, lines 15-16).

With regard to Claim 25, the second airborne aerial vehicle is a manned aircraft (i.e. Fairchild Republic A-10).

With regard to Claim 28, the apparatus of Minovitch inherently performs the method for the air to air transfer of at least one ordnance unit (live ammunition 12) from a first airborne aerial vehicle to a second airborne aerial vehicle, the method comprising:

- loading an at least one ordnance unit or an at least one ordnance assembly into an ordnance storage rack installed within an internal cargo space of the first airborne aerial vehicle (i.e. the live ammunition 12 is

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inherently preloaded into a storage rack/magazine 66 installed within supply aircraft 58);

- transferring the at least one ordnance unit or the at least one ordnance assembly from the ordnance storage rack installed within the cargo space of the first airborne aerial vehicle into an ordnance carriage cradle associated with a manipulable, extendible arm (i.e. tubular conveyor 68 functions as an ordnance carriage cradle within flying conveyor/arm 10, which is extendible from supply aircraft 58 as seen in Figure 3, and is manipulable via control surfaces 54) secured at the first end to the body of the first airborne aerial vehicle while the second end is provided with a freedom of movement to enable bi-directional movement of the second end between the first airborne aerial vehicle and the second airborne aerial vehicle (i.e. the control surfaces 54 enable bi-directional movement of the far end of the arm 10, which has freedom of movement);
- manipulating the extendible arm and the associated ordnance conveyor mechanism to provide for the bi-directional movement of the arm between the first airborne aerial vehicle and the second airborne aerial vehicle (i.e. the control surfaces 54 manipulate the extendible arm and the associated tubular conveyor 68 within, inherently providing for bi-directional/multi-directional movement of the arm between the two vehicles).

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With regard to Claim 29, the apparatus of Minovitch inherently establishes contact between the at least one ordnance unit (12) and the second airborne aerial vehicle (62) and attaches the at least one ordnance unit to the pylon of the second airborne aerial vehicle (i.e. magazine 76, functioning as a pylon, receives the ordnance unit/ammunition 12).

With regard to Claim 30, the apparatus of Minovitch establishes contact between the second end of the arm and the second airborne aerial vehicle via the manipulation of the arm (i.e. control surfaces 54 on wings 52 are operated to guide the far end of the arm to receptacle 60 on aircraft 62, Column 3, lines 12-26, Figure 3).

With regard to Claim 31, the apparatus of Minovitch uploads the ordnance unit on an internal weapon station on the second airborne aerial vehicle (i.e. ammunition 12/64 is loaded into magazine 76 in preparation for being fired by gun 78, Column 3, lines 44-54).

With regard to Claim 32, the apparatus of Minovitch inherently disconnects the second end of the arm from the at least one ordnance unit (i.e. the second end of the arm of Minovitch is inherently disconnected from the ordnance unit 12/64 when the ordnance unit leaves the conveyor 10). The ordnance unit is stabilized to the pylon (i.e. the ammunition 12/64 is secured within the magazine 76). The

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ordnance unit is fused (i.e. ammunition 12/64 of Minovitch is inherently fused to be fired from gun 78).

With regard to Claim 33, the manipulable extendable arm is inherently retracted at the completion of the ordnance transfer procedure into the internal cargo space of the first airborne aerial vehicle (i.e. the flying conveyor 10 is extended or retracted longitudinally via driving gears 70 and small rails 72, Figures 4,4A, inside the supply aircraft 58, Column 3, lines 39-44).

With regard to Claim 39, the apparatus of Minovitch inherently is retrieved at the end of the transfer, therefore the apparatus is capable of the step of aborting the ordnance transfer comprising the retrieval of the arm.

14. Claims 1, 41, 3-5, 13, 28-33, and 39-40 are rejected under 35 U.S.C. 102(b) as being anticipated by Roberge (U.S. Patent 3,167,278).

With regard to Claim 1, Roberge teaches an apparatus for the air-to-air transfer of at least one ordnance unit from a first airborne aerial vehicle to a second airborne aerial vehicle, the apparatus comprising:

- An ordnance storage rack within a cargo space of the first airborne aerial vehicle to provide pre-transfer storage space to an at least one ordnance unit (i.e. rockets are inherently held on some form of rack within the cargo space of the aircraft)

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- Pylon installed on the second airborne aerial vehicle and intended to receive an at least one ordnance unit transferred from the first airborne aerial vehicle to the second airborne aerial vehicle (i.e. probe element 44)
- An at least one transferable ordnance unit positioned prior to transfer on the ordnance storage rack located within the cargo space of the first airborne aerial vehicle (i.e. the ordnance unit 38 is on assembly 14, connected to the end of the cable 16 prior to transfer)
- An ordnance transfer assembly providing for the carriage of the at least one ordnance unit from the first airborne aerial vehicle to the second airborne aerial vehicle (i.e. cable 16 is unwound via winch 18 to carry the ordnance unit 38 in ordnance assembly 14 to the receiving aircraft 12)
- A power generator device to provide power for the movement of the ordnance transfer assembly (i.e. the winch 18 is inherently provided with power by a power generator device)

With regard to Claim 41, the ordnance transfer assembly further comprises an extendible arm assembly (i.e. the cable 16 is an extendible arm assembly) attached to the first airborne aerial vehicle, the arm first end is attached to the body of the first airborne aerial vehicle, the arm second end provided with freedom of movement.

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With regard to Claim 3, Roberge teaches an ordnance assembly comprising a set of tubes for holding multiple ordnance units (Figure 10), which is disclosed as being held on the end of the cable 16, prior to transfer. Therefore, Roberge teaches the apparatus of Claim 1 wherein the ordnance storage rack comprises an at least one disposed storage cradle (i.e. assembly/multi-rocket pod 68) to hold the ordnance units and disposed supporting members (i.e. the tubular openings in 68) to support the at least one disposed storage cradle.

With regard to Claims 4 and 5, the at least one ordnance unit is an aerial bomb device and a missile device (i.e. rockets as seen in Figure 11).

With regard to Claim 13, Roberge teaches the apparatus of Claim 1 as rejected above wherein the ordnance transfer assembly comprises:

- An ordnance carriage cradle for an in-transfer storage of the ordnance assembly (i.e. the multi-rocket pod 68 carries a rocket or the ordnance unit 38 is carried by a cradle in assembly 14 as seen in Figure 8), the ordnance carriage cradle comprising:
- At least two ordnance gripping arms (i.e. the ordnance release mechanism 36 in Figure 8 has two arms seen holding the ordnance unit 38)
- A pylon adapter to carry the at least one ordnance unit during an air-to-air ordnance transfer (i.e. the carrier tube 28 connects to the pylon and is part of the ordnance assembly 14), the pylon adapter comprising



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- A mechanical connector to the pylon (i.e. the carrier tube 28 receives the pylon 44 via drag cone 31)
  - At least one stabilizing surface to be used for stabilizing the pylon adapter to the pylon (i.e. drag cone 31)
- A multi-fuzing unit to enable fuzing of the at least one transferred ordnance unit (i.e. electrical cable 50 provides control of the release mechanism 36, the connection/fuzing occurring during connection between probe and ordnance assembly, acting as a fuzing of the ordnance unit, Column 2, lines 56 to Column 3, line 6)

With regard to Claim 28, the apparatus of Roberge inherently performs the method for the air to air transfer of at least one ordnance unit (rocket) from a first airborne aerial vehicle to a second airborne aerial vehicle, the method comprising:

- loading an at least one ordnance unit or an at least one ordnance assembly into an ordnance storage rack installed within an internal cargo space of the first airborne aerial vehicle (i.e. rockets are inherently loaded into the aircraft and placed within the storage cargo area, inherently on a rack);
- transferring the at least one ordnance unit or the at least one ordnance assembly from the ordnance storage rack installed within the cargo space of the first airborne aerial vehicle into an ordnance carriage cradle

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associated with a manipulable, extendible arm (i.e. the ordnance unit/rocket is loaded onto end of cable 16, which is manipulable and extendible at end of boom 22 using carrier tube 28 as seen in Figure 8) secured at the first end to the body of the first airborne aerial vehicle while the second end is provided with a freedom of movement to enable bi-directional movement of the second end between the first airborne aerial vehicle and the second airborne aerial vehicle (i.e. the cable 16 is reeled in and out by winch 18);

- manipulating the extendible arm and the associated ordnance conveyor mechanism to provide for the bi-directional movement of the arm between the first airborne aerial vehicle and the second airborne aerial vehicle (i.e. the cable 16 is reeled out and the conveyor mechanism/cradle/carrier tube 28 are manipulated by winch 18, inherently bi-directionally between the two aircraft).

With regard to Claim 29, the apparatus of Roberge makes contact between the ordnance unit and the second airborne aerial vehicle via the carrier tube (28) and probe (44) and attaches the ordnance unit to the pylon/probe (44) of the second/receiving aerial vehicle.

With regard to Claim 30, the contact is established via manipulation of the arm (i.e. the cable 16 is reeled in and out).

With regard to Claim 31, the ordnance unit is uploaded onto an external weapon station on the second airborne aerial vehicle (Figures 1 and 6).

With regard to Claim 32, the second end of the arm/cable 16 is disconnected from the ordnance unit, the ordnance unit is stabilized to the pylon (via tube 28) and the ordnance unit is fuzed (i.e. electrical cable 50 provides control of the release mechanism 36, the connection/fuzing occurring during connection between probe and ordnance assembly, acting as a fuzing of the ordnance unit, Column 2, lines 56 to Column 3, line 6).

With regard to Claim 33, the arm/cable (16) is retracted at the completion of the process into the internal cargo space of the first airborne aerial vehicle.

With regard to Claim 39, aborting the ordnance transfer (i.e. ending) comprises retrieval of the arm (i.e. cable 16 can inherently be wound back into the aircraft at any time).

With regard to Claim 40, aborting the ordnance transfer (i.e. after the completion of the transfer) comprises jettisoning of the ordnance carriage cradle (i.e. rockets 80 assist in separation of assembly 66 to separate/jettison from the probe element 44, Column 3, lines 57-59).

***Claim Rejections - 35 USC § 103***

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

16. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

17. Claims 6 and 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Minovitch (U.S. Patent 5,103,712) in view of von Thal et al (U.S. Patent 6,651,933).

With regard to Claim 6, Minovitch teaches the apparatus of Claims 1 and 41 as rejected above but does not expressly disclose the ordnance transfer control assembly comprising a computer device having a memory device to hold software programs associated with the control of the movement of the extendible arm, a communication device to transfer bi-direction control data, command data, and positional information between the first aerial vehicle and the extendible arm,

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thereby enabling control for an air-to-air transfer of the at least one ordnance unit from the first aerial vehicle to the second aerial vehicle.

However, von Thal et al teach an aircraft refueling boom system that uses a computer device (112), inherently having a memory device to hold software programs associated with the control of the movement of the extendible boom (i.e. software as in Column 8, line 1, wherein coordinate data for movement is created from images), a communication device inherently transferring bi-directional control data, command data, and positional information between the first aerial vehicle and the extendible arm (i.e. the refueling control station 114, controlled by computer 112 as described above, is in communication with valves to control hydraulic flow to control surfaces 122 to inherently provide bi-directional control for extending, moving, and retracting the boom 14, Figure 5, and Column 7, lines 19-33, communication data being provided between the computer 112 and the arm), thereby enabling control for an air-to-air transfer of fuel from the first aerial vehicle to the second aerial vehicle.

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to use the computer and communication device of von Thal, for the purpose of accurately controlling the arm, as taught by von Thal, in the invention of Minovitch, in order to precisely locate and safely orient the transferring device prior to initiating the transfer.

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With regard to Claim 8, Minovitch does not expressly disclose the extendible arm assembly further comprising an image acquiring device to provide the arm position-specific images to the ordnance transfer control assembly. However, von Thal teaches the extendible arm assembly/refueling boom (14) further comprising an image acquiring device (i.e. camera 110) for the purpose of providing the arm position-specific images to the ordnance transfer control assembly (i.e. the cameras provide the computer 112 with visual targeting as described throughout the von Thal specification). Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to include cameras, as taught by von Thal, in the invention of Minovitch, for the purpose of providing accurate targeting sight ability and images for computer analysis for guiding the arm, as taught by von Thal.

With regard to Claim 9, Minovitch does not expressly disclose the apparatus further comprising at least one lighting device. However, von Thal teaches the use of LEDs for lighting the targeting sights of the extendible boom to differentiate the targeting sights from other lights (i.e. the LEDs differentiate the targeting sights from other lights which cause reduced quality lighting conditions, column 4, lines 42-52). Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to include the LEDs of von Thal in the invention of Minovitch for the purpose of assisting the operator or computer

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in visualizing the target sight under reduced quality lighting conditions (i.e. distracting light conditions), as taught by von Thal.

Alternatively, with regard to Claim 9, and further with regard to Claim 10, Minovitch does not expressly disclose the apparatus further comprising an at least one night-vision device or lighting device to provide enhanced quality mechanical arm position-specific images during day and nighttime ordnance transfer. However, von Thal teaches cameras that are capable of operation from visible light to infrared (IR) light, as well as lighting devices (i.e. infrared/IR floodlights, Column 5, lines 23-30) for the purpose of day and night lighting conditions (i.e. the cameras detecting IR light function as night-vision devices, column 5, lines 23-31, and the IR floodlights described serve as lighting devices). Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to use the IR-capable cameras and the accompanying IR floodlights, as taught by von Thal, in the invention of Minovitch, for the purpose of providing night-vision capability for use during nighttime transfers, as taught by von Thal.

18. Claims 12 and 14-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Minovitch (U.S. Patent 5,103,712) in view of Rodriguez (U.S. Patent 5,243,896).

With regard to Claim 12, Minovitch teaches the apparatus of claim 41 but does not expressly disclose the extendible arm assembly comprising at least two

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interlinked arm sections coupled together by at least one motorized joint to provide for the movement of the interlinked arm sections in respect to each other. However, Rodriguez teaches a logistical support apparatus for weapons vehicles capable of use in aircraft in which a motorized telescoping and articulated boom is used to convey ammunition or fuel from a supply vehicle to a receiving vehicle, for the purpose of field reloading and refueling under operating conditions. Rodriguez teaches the extendible arm assembly/boom (18) comprising two interlinked arm sections coupled together by a motorized joint to provide for movement of the interlinked arm sections in respect to each other (i.e. the telescoping sections 18a and 18b are interlinked arm sections coupled together by actuators/motorized joints 70, as seen in Figure 5) for the purpose of a retractable boom assembly with adjustable length. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to use the telescoping interlinked arm sections coupled together by a motorized joint, as taught by Rodriguez, in the invention of Minovitch, in order to have further control of the length and position of the boom for precise positioning before ammunition transfer, as taught by Rodriguez.

With regard to Claim 14, Minovitch does not teach the extendible arm being an extendible telescopic probe assembly comprising at least two telescopic tubes with the base of the assembly attached to the first aerial vehicle and the innermost telescopic tube linked to an arm assembly. However, Rodriguez



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teaches a logistical support apparatus for weapons vehicles capable of use in aircraft in which a motorized telescoping and articulated boom is used to convey ammunition or fuel from a supply vehicle to a receiving vehicle, for the purpose of field reloading and refueling under operating conditions. Rodriguez teaches the extendible arm assembly/boom (18) comprising two telescopic tubes (18a and 18b) with the base of the assembly attached to the first/supply vehicle and the innermost telescopic tube linked to an arm assembly (i.e. linked to transition boom section 26, serving as an arm) for the purpose of a retractable boom assembly with adjustable length. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to use the telescopic probe assembly taught by Rodriguez, in the invention of Minovitch, in order to have further control of the length and position of the boom for precise positioning before ammunition transfer, as taught by Rodriguez.

With regard to Claim 15, the arm assembly of Rodriguez (i.e. telescoping arm assembly of the extendible arm assembly) comprises two interlinked mechanized arm sections (18a and 18b) joined by motorized links (actuators 70) and providing movement of the mechanized arm sections in respect of each other.

With regard to Claim 16, as best understood by the examiner, the arm assembly of Minovitch comprises a transferable ordnance assembly connected to the second end of the arm assembly, the transferable ordnance assembly

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comprising an ordnance carrier cradle equipped with gripping arms to secure a transferable ordnance assembly to the ordnance carriage cradle (i.e. the booms/arms have a conveyor/moving belt 14 acting as a transferable ordnance assembly/ordnance transfer assembly, connected to the second end of the arm assembly, the transferable ordnance assembly comprising an ordnance carrier cradle equipped with gripping arms/i.e. the moving belt 14 of Minovitch is supported/gripped by guide tracks 32 and rollers 42, the guide tracks necessarily functioning as gripping arms, Figures 2 and 2A).

With regard to Claim 17, the transferable ordnance assembly of Minovitch comprises a pylon adapter unit (i.e. coupling system 61) carried by the ordnance carriage cradle (i.e. at the end of the ordnance carriage cradle/tubular conveyor 68), the pylon adapter unit to carry an at least one ordnance unit (i.e. the ammunition passes through coupling system 61) and to be attached to a pylon uploaded on a weapon station on the second airborne aerial vehicle (i.e. the ammunition is passed into weapons station/magazine 76 in the receiving aircraft 62).

19. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Minovitch (U.S. Patent 5,103,712) in view of Czajkowski et al (U.S. Patent 3,768,415).

With regard to Claim 13, Minovitch teaches the apparatus of Claim 1 as rejected above wherein the ordnance transfer assembly comprises:

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- An ordnance carriage cradle for an in-transfer storage of the ordnance assembly (i.e. the tubular conveyor 68 cradles the ordnance), the ordnance carriage cradle comprising:
- At least two ordnance gripping arms (i.e. the tubular conveyor wraps around the ammunition and is supported/gripped by guide tracks 32 and rollers 42, the guide tracks supporting the ordnance through the conveyor and necessarily functioning as gripping arms, Figures 2 and 2A)
- A pylon adapter to carry the at least one ordnance unit during an air-to-air ordnance transfer (i.e. the coupling system 61 connects to the receptacle 60 which feeds to the magazine/pylon 76), the pylon adapter comprising
  - A mechanical connector to the pylon (i.e. the conveyor 74 connects the coupling system 61 and receptacle 60 to the magazine/pylon 76)
  - At least one stabilizing surface to be used for stabilizing the pylon adapter to the pylon (i.e. the connection is made between the coupling system 61 and the conveyor 74 at receptacle/stabilizing surface 60)

However, while Minovitch does not expressly disclose the ordnance transfer assembly including a multi-fuzing unit to enable fuzing of the at least one transferred ordnance unit. Minovitch does disclose the use of the apparatus as a transport for missiles, which would use a fuzing unit. Fuze devices are well

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known, such as that of Czajkowski et al, which is a fuze arming device to be attached to bombs and ordnance. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to further include a fuzing device in the ordnance transfer assembly to fuze the ordnance, as taught by Czajkowski, prior to being released from the receiving vehicle during combat or excercises.

20. Claims 23-24, 26, and 37-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Minovitch (U.S. Patent 5,103,712).

With regard to Claim 23, Minovitch teaches the apparatus of claim 22 as rejected above but does not expressly disclose the first airborne aerial vehicle being a Lockheed Martin C-130 Hercules. However, it would have been obvious to one having ordinary skill in the art at the time of the invention to use any cargo aircraft, and the Lockheed Martin C-130 would have been a well-known and commonly understood potential choice for a capable cargo aircraft.

With regard to Claims 24 and 26, Minovitch does not teach the first or second airborne aerial vehicle being an unmanned or uninhabited aircraft. However, it would have been obvious to one having ordinary skill in the art at the time of the invention to try the invention in any aircraft or airborne vehicle, and unmanned/uninhabited vehicles and aircraft were known at the time of the invention, with the capability of remotely controlling all aircraft activities.

With regard to Claim 37, Minovitch does not expressly disclose transferring the at least one ordnance unit in a fused state with an at least one arming cable where the first end of the arming cable is attached to the fuzing device. However, it would have been obvious to one having ordinary skill in the art to recognize the possibility of transferring the ordnance unit in a fused state with an arming cable attached to a fuzing device, as Minovitch discloses the use of missiles, which would inherently could be transferred in a fused or unfused state, and it would have been obvious to try either.

With regard to Claim 38, Minovitch does not expressly disclose extracting an at least one previously used arming cable from the pylon and attaching the second end of the arming cable to they pylon. However, Minovitch does disclose the possibility of transferring missiles with the disclosed invention, and this would inherently involve arming cables, which, by design requirements, would require cleared pylon/magazines, such that fresh arming cables could be installed. Therefore, it would have been obvious to one having ordinary skill in the art to remove a previously used cable and attach the second end of a new arming cable to the pylon/in the magazine.

21. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Minovitch (U.S. Patent 5,103,712) in view of Lounge et al (U.S. Patent Application

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Publication 2002/0079407). Minovitch does not expressly disclose using the reloading system/apparatus wherein the first aerial vehicle and the second aerial vehicle are space platforms. However, it was known at the time of the invention that space platforms require resupply and reload just as other vehicles do. Lounge teaches an underway replenishment system for space vehicles in which payload is transferred from one space vehicle to another. It would have been obvious to one having ordinary skill in the art at the time of the invention to use the reloading system/apparatus of Minovitch wherein both aerial vehicles are space platforms, as taught by Lounge et al, for the purpose of reloading payload (including ammunition) between two space vehicles, as taught by Lounge et al.

22. Claim 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over Minovitch (U.S. Patent 5,103,712) in view of Abraham (U.S. Patent 3,008,674).

Minovitch does not expressly disclose the step of aborting the ordnance transfer comprising jettisoning of the arm or the ordnance or the ordnance carriage cradle or at least one part of the arm. However, Abraham teaches an in-flight transfer system for moving fuel between two aircraft in flight in which the refueling unit (10, which includes arm extension/hose 16) is readily detachable/jettisoned by the aircraft pilot should an emergency arise (Column 2, line 45). Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to further include the ability to jettison the arm, as taught by Abraham, in the invention of Minovitch, for the purpose of resolving or dealing with an emergency, as taught by Abraham.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen Brookman whose telephone number is (571) 270-5513. The examiner can normally be reached on Monday through Thursday 10:00 AM EST to 4:00 PM EST, away alternating Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Nguyen can be reached on (571) 272-6952. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/S. B./  
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